WISCONSIN STATE REPRESENTATIVE
Louis J. Molepske, Jr.
71ST ASSEMBLY DISTRICT

October 14, 2009

Testimony Before the Assembly Committee on Labor
On Assembly Bill 288
The Professional Engineering Education Act

Madam Chair and members of the Assembly Committee on Labor, I would like to thank you for holding this public hearing on AB 288, the Professional Engineering Education Act. I would also like to recognize my co-author, Rep. Gottlieb's work on this bill last session and this session with me.

A Professional Engineer (PE) is a supervisory engineering position that oversees the work of the project engineers, providing guidance and technical expertise on the project. A PE signs off on, and applies their seal to, all blueprints and other documents for the project and takes full responsibility for the safety of the public. Not all engineers want, or are qualified, to become PE's and this bill deals *only* with the educational qualifications to become a registered professional engineer.

I. Background

a. At a time when the need for technical professionals and engineers has never been greater, AB 288 aims to certify the pool of qualified, professional engineers doing business in and outside of Wisconsin

II. Current Law

a. Currently, there are four routes that a prospective professional engineer may take to become a P.E. The applicant must submit satisfactory evidence of one of the following:

   i. Graduation from an engineering course of not less than four years plus a record of four or more years of experience indicating the applicant is competent to be placed in charge of engineering work. The applicant must pass both the Fundamentals of Engineering (FE) and the Principals and Practice of Engineering (PPE) examinations.

   ii. A record of eight of more years of experience indicating the applicant is competent to be placed in charge of engineering work. The applicant must pass both the Fundamentals of Engineering

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iii. (FE) and the Principals and Practice of Engineering (PPE) examinations.

iv. A record of twelve or more years of experience indicating the applicant is competent to practice engineering. The applicant must pass the PPE exam only.

v. Graduation from an engineering course of not less than four years and eight years of experience indicating the applicant is competent to practice engineering. The applicant does not have to pass any examinations to become a registered professional engineer.

b. Currently, with the one exception, an applicant may not be registered as a professional engineer unless the applicant passes an examination that includes questions on the design needs of people with physical disabilities and the relevant statutes and codes.

c. Current law requires the examining board to make an applicant's examination papers available for review for one year after the examination.

d. Under current law an applicant may request a review of the applicant's examination, and the examining board must provide the reason for the failing grade.

III. Assembly Bill 288 Makes the Following Changes to Current Law:

a. AB 288 reduces the number of routes to becoming a P.E. to two, and requires certification of graduation as a prerequisite. An applicant for registration as a P.E. must submit satisfactory evidence of either of the following:

i. Graduation from an approved engineering course of not less than four years and a record of four or more years of experience indicating the applicant is competent to be placed in charge of engineering work, or

ii. Graduation from an approved engineering course of not less than two years and a record of six or more years of experience indicating the applicant is competent to be placed in charge of engineering work.

b. Requires that <u>all</u> applicants are required to pass the state examination.

c. The requirement to include questions on the design needs of people with disabilities or relevant statutes or codes is removed from the statutes as this is now a mandatory section of the Federal PPE test.

d. AB 288 will eliminate the Retain and Review provisions that currently exist as the test is now given electronically.

e. Under AB 288, the board will no longer be required to provide reasons for a failing grade.

The need for educated engineering professionals has never been greater. Wisconsin's university and technical college system does a tremendous job each year in providing the state with this valuable resource. AB 288 supports this need relating to other engineers and does not change state requirements to be a licensed engineer.

AB 288:

- Ensures that every PE applicant has graduated from an accredited and board approved college or university;
- That every PE applicant has successfully passed the FE and PPE examinations (a non-subjective prerequisite that will ensure that Wisconsin PE's are sufficiently knowledgeable in the skills required to be a PE in their engineering specialty);
- That the redundant questions relating to design needs for persons with disabilities is removed from the state-given test; and
- That since the tests are now given electronically, on a computer, the mandatory retention provisions and requirement for Board to provide reasons for a failing grade are removed from statute.

Again, I thank the Committee for holding a public hearing on AB 288, The Professional Engineering Education Act, and I will gladly answer any questions that the Committee has.

Louis J. Molepske, Jr.
State Representative
71st Assembly District

ACEC
American Council of Engineering Companies
of Wisconsin

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the business voice of the Wisconsin consulting engineering industry

October 14, 2009

Representative Christine Sinicki, Chairperson
Assembly Committee on Labor
Wisconsin State Assembly
Madison, WI

RE: AB 288 – Professional Engineer Registration and Licensing

Dear Representative Sinicki and Members of the Committee on Labor:

The American Council of Engineering Companies of Wisconsin (ACEC WI) supports AB 288 and encourages passage of this bill. This proposed legislation strengthens the requirement for licensure of professional engineers (PE) and assures a higher level of protection for Wisconsin's citizens. It is good public policy.

Through this bill licensure is reserved for the most qualified engineers; however, AB 288 is not career limiting. A PE credential is not necessary for individuals to do engineering. Elements of project development can and are being performed by non-PEs, engineers, and technicians with a variety of education and experience backgrounds. The PE licensure is reserved for the individual in responsible charge, the individual who stamps the plan.

ACEC WI acknowledges this bill allows graduates from a technical college with a minimum of 2 years of engineering related study to sit for the PE exam. While our position would favor the requirement of a 4-year engineering degree, in the spirit of compromise, we accept this language in AB 288. The bill still strengthens and standardizes licensure requirements and increases the public trust in the profession.

This legislation is important to the industry, as continuation of current law is jeopardizing Wisconsin professional engineers' ability to practice in other states. The current PE licensure requirement is not considered sufficient in a growing number of states and licensure reciprocity is being denied. Wisconsin needs to have an industry that is competitive nationally and globally.

Thank you for holding a public hearing and we urge passage of AB 288.

Sincerely,

Carol Godiksen
Executive Director

AB 288 Hearing
Committee on Labor
Testimony by Glen R. Schwalbach, P.E.
October 14, 2009

I am Glen R. Schwalbach. I reside at 1090 Moonriver Dr., De Pere, Wisconsin. I am a Wisconsin-licensed Professional Engineer and an active member of the Wisconsin Society of Professional Engineers (WSPE) and the National Society of Professional Engineers for over 35 years.

Because of logistics, my comments have not been reviewed by WSPE. So, I am speaking for myself even though I have been active in the efforts of WSPE to improve this bill.

I am here to support AB 288 and its Amendment 1.

I also feel an ethical responsibility to be sure you as members of this committee understand the context of what we call the engineers' identity crisis. In general, the public does not differentiate between a technician who has the title of "engineer" (and may not even have a two-year associate degree) with the graduate of a four-year accredited baccalaureate degree in engineering who also has the title of "engineer". The former may be performing maintenance on a steam boiler or working the control panel at a television station. The latter may be designing a complex switching station as an electrical engineer working for a utility or designing the steering system as an automotive engineer for a car company or designing a highway bridge as an engineer in the Wisconsin DOT. The former are not practicing engineering as usually defined. The latter are. But none of these "real" engineers are required to be licensed under exemptions in current Wisconsin law. These situations suggest we have a lot of work to do if our licensure laws for Professional Engineers are to fully protect the safety and welfare of the public.

But, at least, current law requires a licensure process for a critical group of engineers who are those who offer their engineering services to the public rather than just for their employer. This group is about 10% of four-year engineering graduates but they are the ones who are usually in responsible charge of engineering teams of other engineers, engineering technologists or technicians working on projects which impact the safety and welfare of the public. This fact reflects on just how important AB 288 is. It is the second step; the first being the passage of last year's bill authorizing the Department of Regulation and Licensing to require continuing education of licensed Professional Engineers. AB 288 addresses Wisconsin's inadequate optional paths to licensure by requiring every applicant to take the two-day national exams in addition to the education and experience requirements.

I urge you to move the bill forward with a recommendation for passage as soon as possible.

Assembly
PUBLIC HEARING
Committee on Labor

Wednesday, October 14, 2009
1:00 PM
225 Northwest
State Capitol

Assembly Bill 288

Relating to: education and work experience requirements for registration as a professional engineer and examinations for professional engineering credentials.

By Representatives Molepske Jr., Gottlieb, Townsend, Zepnick, A. Ott, Jorgensen, Kerkman, Danou, Petrowski and Gunderson; cosponsored by Senators Plale and Taylor.

Testimony
Of

Martin J. Hanson, PE

Chairman—Examining Board of Architects, Landscape Architects, Professional Engineers, Designers and Land Surveyors
And
Chairman—Professional Engineers Section

Committee on Labor

Representative Christine Sinicki (Chair)
Representative Terry Van Akkeren (Vice-Chair)
Representative Andy Jorgensen
Representative Joe Parisi
Representative Barbara Toles
Representative James Soletski
Representative Mark Honadel
Representative Stephen Nass
Representative Daniel Knodl

Madam Chairperson Sinicki and members of the Assembly Committee on Labor:

My name is Martin Hanson and I am a professional engineer.

I am presenting testimony on behalf of the Examining Board of Architects, Landscape Architects, Professional Engineers, Designers and Land Surveyors, where I am chairman, and the Engineers Section of the Joint Board, where I am also chairman. I have served on these boards for eight years. Both boards have authorized me to speak on behalf of the respective body. I am a registered/licensed Professional Engineer in seven states and have been in the profession for over thirty years. I am also a member of several professional organizations who also support this legislation.

I would like to thank the chairperson for scheduling the hearing on this important legislation. I worked hard on this legislation last year with Representative Gottlieb and others, but the bill stalled on the floor of the Senate. Today, I intend to provide testimony on this legislation to inform

and answer your questions to convey the purpose behind the changes included in Assembly Bill 288.

I have been working on some of these changes since I was first appointed to the board. This legislation is strongly supported by the Engineers Section and is likewise strongly supported by the Examining Board of Architects, Landscape Architects, Professional Engineers, Designers and Land Surveyors.

I am also happy to report that this bill has received the support of members of the American Society of Civil Engineers, Wisconsin Section, the Wisconsin Society of Professional Engineers (WSPE), and the American Council of Engineering Companies of Wisconsin (ACEC WI). I have also received letters and phone calls in support of this bill from my many colleagues in the industry.

Let me take a moment to explain the practice of engineering. Engineer is a broad term that covers people who may design anything from toys to the space shuttle. Engineers may be Electrical, Mechanical, Software, Civil, Transportation, and others, and each practice in a discipline specialty.

Not all engineers are licensed professional engineers; in fact many are not.

The mission of the Examining Board is to protect the public health, safety and welfare by granting a professional engineering license to only those most qualified. Many engineering projects are designed by a team of engineers and technicians; only one of those team members has the professional engineer license and he/she is designated to be in responsible charge for the engineering on the project. Therefore, this credential is not a perquisite for working in the engineering field as some of the other credentials administered by the Department of Regulation and Licensing. Let me say that again. The professional engineer credential is intended for one member of the project team who assumes responsible charge for the project and will have a staff of engineers and technicians working on the project.

This bill does three simple things. First, it streamlines the licensure process for engineers; second, it eliminates the review of examinations; and thirdly, it eliminates the statutory need for testing in a specific area. All

of these changes in the statutes for professional engineers and are long overdue. I will address each change separately.

STREAMLINING LICENSURE

The current path to licensure in Wisconsin is very complex. There are numerous paths and branches as shown in Exhibit 1 from the Wisconsin Department of Regulation and Licensing web site.

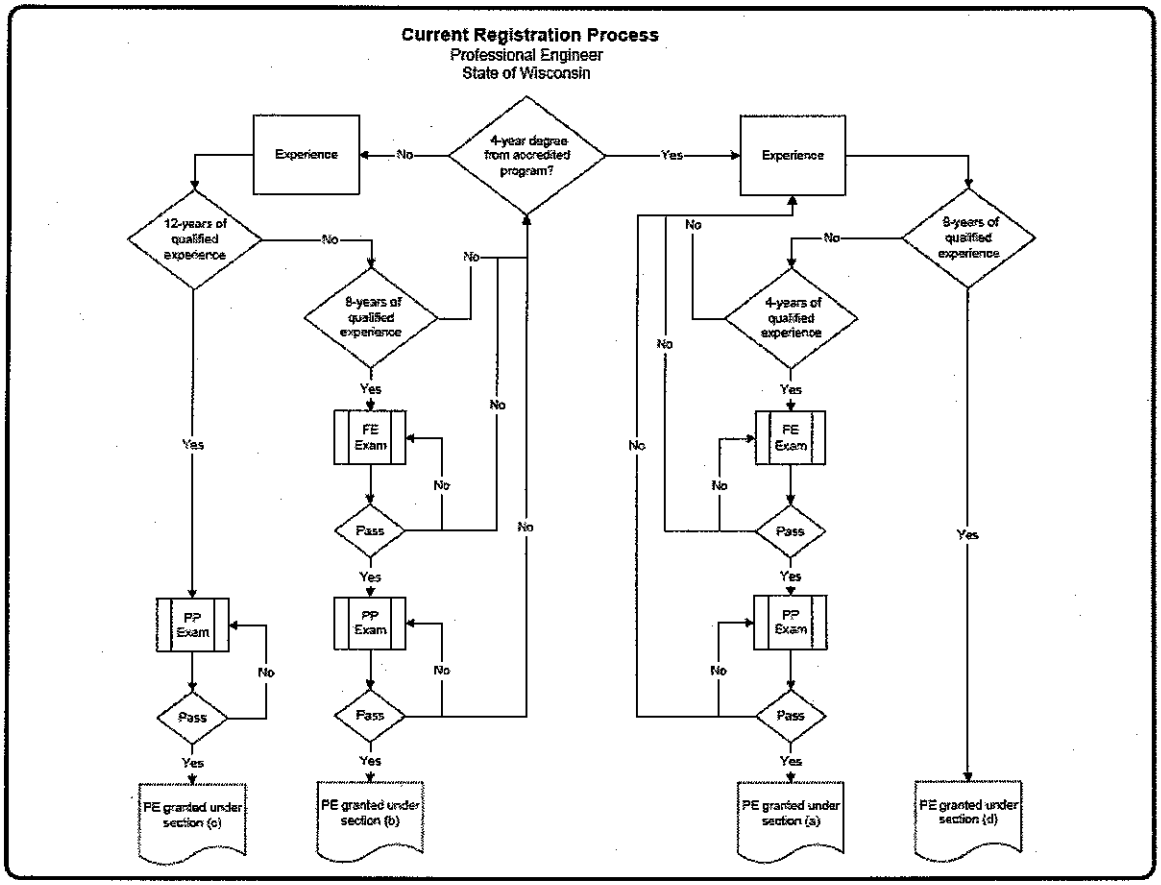


EXHIBIT 1

This bill eliminates all the alternate paths to licensure and prescribes a single path, one set of requirements, and one standard for all applicants. That path will be, in sequential order:

1. Obtain an engineering degree from an ABET or Board approved institution
2. Pass the 8-hour Fundamentals of Engineering exam (national exam)
3. Obtain 4/6 years of qualifying engineering experience
4. Pass the 8-hour Principles and Practice exam (national exam)

Currently, the most problematic path to licensure in the current law is the approved degree plus 8 years of qualified experience. This path forces the board, two of whom are public members with limited technical qualifications and knowledge, to make subjective judgments on applicants' qualifications for licensure. We do not believe this is good public policy and obstructs the board's mission of protecting public health, safety, and welfare. This path is sometimes referred to as the "grandfather" clause or path, as it was likely enacted in very early licensure legislation to allow current practitioners the ability to become licensed.

This path, and all other paths in the current law, are repealed by Assembly Bill 288. Applicants will all have a consistent and standardized path to licensure. The Board will evaluate each candidate against the same criteria.

Examinations by themselves do not ensure the competency of any engineer. But we believe the exam is a far better and more consistent measure than a subject review of a resume of experience. The path to licensure is structured in three parts, education, experience, and examination.

In the spirit of compromise, we have worked with the Wisconsin Technical Schools to include a 2 year program of engineering study as an option for the educational requirement. Many engineers are uncomfortable with this 2-year option because there are many studies moving the industry to require more than a four-year degree to satisfy the educational requirement. In fact, all our neighboring states require the 4-year degree; Wisconsin will stand alone allowing the 2-year program. This bill preserves this path; it does not create a new path to licensure.

Professional Engineers who obtain their license in Wisconsin by this "grandfather" clause or the 2-year engineering program will be severely disadvantaged in other states when applying for licensure by comity. Most states do not recognize or accept the Wisconsin license granted by experience because it was not obtained by examination.

With this bill, Wisconsin professional engineers must take the national Principles and Practice exam which is common to all fifty states. Requiring all Wisconsin engineers to obtain licensure by examination will make it easier for them to obtain licenses in other states. This will provide more opportunities for Wisconsin professional engineers.

The Engineer Section predominately sees applications for licensure in this path in two scenarios.

Applicants who Fail to Pass Principles and Practice Exam

We have seen a number of applicants who have failed the Principals and Practice examination, once or several times. Some simply wait an additional four years and re-apply under the "grandfather" clause. Some of

these applicants will even state in their application that they are applying because they have failed the exam. Furthermore, some of those who have been denied licensure under the "grandfather" clause, on appeal during their hearing freely state that they don't want to take the exam or believe they cannot pass the exam. The "grandfather" path is unquestionably the easier path to licensure. It is also the most subjective and therefore we believe an inappropriate process to grant a professional engineer license with its critical responsibilities. The board should have evidence sufficient to support a strong recommendation for licensure for all applicants who are granted a license to practice. We can only have this sufficient evidence by having consistent criteria to measure against. We believe the criteria should be the ability to pass the Principal and Practice examination. The inability of an applicant to pass the exam raises doubt as to their competence, regardless of the applicant's experience. The board's duty is to eliminate doubt in the consideration of candidates for licensure.

Applicants from out-of-state

We are seeing an increase in the number of applicants under the "grandfather" clause who are residents of states other than Wisconsin. This is because Wisconsin may be the only state that still has this

experience path to licensure. Our lower application and renewal fees also make Wisconsin an attractive state to obtain licensure. Many of these applicants have significantly more experience than the required eight years. These are typically persons who are looking to simply add a credential to their resume for compensation, status, or other reasons outside the interests of the objective of licensure. Granting licenses in this manner is not within our mission to protect public health safety and welfare and extends our intended jurisdictional reach far beyond the borders of Wisconsin. We believe this to be an inappropriate use of our resources and not a good path to a professional credential.

It is not surprising that engineers in the industry across the country generally regard those who have obtained licensure by examination to have met a higher standard than those who have obtained the credential by experience only.

REP KLASS

EXAM REVIEW

The second change included in this bill relates to applicants reviewing exam questions they answered incorrectly.

This bill eliminates the opportunity for an applicant to review their incorrect answers to exam questions.

The tests we use for Fundaments of Engineering and Principles and Practice are developed by The National Council of Examiners for Engineering and Surveying (NCEES) and are used across the country. An enormous amount of effort goes into developing the test question bank. The questions are tested for ambiguity, accuracy, and other measures to ensure they are a fair and objective measure of breath and depth of knowledge. To facilitate testing and scoring, these tests are now multiple choice and machine scored.

The existing legislation was enacted when the examinations were written long-hand. Applicants would develop the solution on paper and submit their answers with supporting logic and calculations. These questions were then graded, and partial credit was granted appropriate to the correctness of the solution strategy contained in the applicant's presentation. In this method of examination, it was logical to allow an opportunity for the applicant to review his or her answer and potentially appeal for additional partial credit.

Multiple choice questions with single unique correct answers eliminate the opportunity to score any partial credit and therefore eliminate any need for post-exam review. Currently if an applicant requests to review a question, we have to seek approval from NCEES and have a board member present during the review. The applicant is shown the question text, the answer choices, and his or her answer. The applicant is NOT shown the correct answer. An unscrupulous applicant could review multiple questions in multiple exam administrations, all for the purpose of harvesting questions for either his or her own benefit (some questions are repeated in each administration of the exam to measure exam difficulty and consistency) or for unauthorized and illegal distribution and/or sale of test questions.

NCEES is concerned, and rightly so, about the security of the exam questions. There is considerable time and money expended in the development and maintenance of the test bank. To allow post-exam review of questions opens the state of Wisconsin to the risk of exam security breach. NCEES has indicated it may hold states liable for the cost of development and testing of replacement questions where the state's process did not ensure the security of the exam. In a recent security

breach, NCEES was successful in a lawsuit were they were awarded a $1M judgment. Wisconsin can ill afford this expense.

We believe that there is no real purpose for reviewing exam questions in the current format, and we want to reduce the risk to the state of Wisconsin for defense of any claims against the state by NCEES or breach of exam questions. In addition, the Department of Regulation and Licensing and the board can use their time more wisely in tasks other than proctoring an applicant's review of test questions.

SPECIFIC AREA TESTING

The third change included in this bill relates to specific area testing. The current statute contains language requiring the examination to "include questions which require applicants to demonstrate knowledge of the design needs of people with physical disabilities and of the relevant statutes and codes."

This legislation was likely enacted in the spirit of Americans' with Disabilities Act implemented in 1973 and 1990. The intent was logically to

raise awareness among newly licensed engineers of the changes to codes and design standards dealing with people with physical disabilities.

The need to specifically test for this attribute no longer exists. The International Building Code has been adopted by many states and local governments. This document, over 700 pages, is revised every three years. It contains a section on accessibility, defining the term as the accommodation of disabled persons in structures. This includes parking spaces, elevators, and restrooms. Local governments may pass ordinances to supplement these requirements. There are extensive resources available to design professionals dealing with the Americans with Disabilities Act including the ADA.gov website.

We believe that the design professions and educators have been working within the requirements of ADA for more than 30 years, and it has become the standard of practice. The examination prepared by NCEES contains information on all subjects that will include ADA impacts where appropriate. Having the statute refer to a specific test area requires the state to prepare and administer these questions separately from the national exam—an

additional burden of state resources with no corresponding benefit to the public.

I want to assure the committee that the removal of this language and requirement in no way whatsoever is intended to diminish the need for design professionals to work within design statutes, codes, and ordinances to accommodate the needs of those with physical disabilities. My uncle, an Architect for years in Arizona, was a polio victim and was confined to a wheelchair for most of his practicing years; I am indeed deeply sensitized to this issue. I again assure the committee that the removal of this requirement does not change the methods and practices of design professionals with regard to accommodations and accessibility issues for persons with disabilities.

We believe that it is no longer necessary to have the statutes specially call out specific engineering areas for questions in the examination. To do so raises questions about other technical areas that should be considered to be included in the examination. The board has confidence in the national exams prepared by NCEES to achieve an appropriate breadth and depth of questions. This is a difficult exam and requires substantial serious

preparation as demonstrated by the overall 54% pass rate in Wisconsin (first-time takers have a higher pass rate of 74%).

Madam Chairperson, this bill include includes provisions that were controversial during the last legislative session; specifically in regard to the educational requirements in this bill. I would like to take just a moment to address this issue.

This bill includes a provision that allows graduates of technical school 2-year engineering programs and experience satisfactory to the board, to apply to sit for the professional engineer examination.

The professional engineer credential should be reserved for those most qualified to supervise and be in responsible charge. The board's function is to determine who among the many professionals in the engineering industry are most qualified. To assist us make that decision, we rely on basically three things. First a degree from an ABET accredited engineering program, second at least four years of qualifying experience, and third, examinations. No system is 100% accurate—some who can pass the test may not be truly qualified. However your and my responsibility is to

manage a system that has a reasonable assurance of a high degree of accuracy. In more cases than not, an education of four years in an ABET accredit program prepares and engineer more than a two year degree in a technical college—both programs serve a critical and useful purpose, but they have different outcomes. The public safety is better served with the higher standard.

This is not a debate about which is better, college/university programs versus technical school programs. They are just different. One issues here is that technical school credits are not always accepted by the University of Wisconsin system for credit when students transfer to seek an engineering degree. I'm not familiar enough with the courses and equivalency to have an opinion on who is right, but the fact that there is a difference under debate only strengthens my argument that the two degrees and the information learned is substantially different.

There is current active debate on educational requirements for licensure. There are several credible studies and recommendations that increase educational requirements beyond the recommended four-year ABET degree. NCEES is in the process of adopting a new model law that

includes this increased educational requirement beyond a bachelor's degree. ASCE released a study, Civil Engineering Body of Knowledge for the 21st Century, further documenting the need for additional educational requirements because the technical component of an engineering degree has eroded over time.

Last session, this bill was also framed as a "fencing out" proposition—IT IS NOT. There are many unlicensed persons productively working for engineering companies and government agencies. The license is only required, and appropriately so, for those who are in responsible charge of projects. Project teams are always composed of a variety of technical specialists, engineers and technicians, licensed and unlicensed; all vital members of the team; all with potential for rewarding careers. This field is not like cosmetology or barbering whereby you must have a license to practice. The professional engineer credential is reserved for those who have demonstrated a level of competence such that they are reasonably competent to accept professional liability for the protection of public health, safety, and welfare. This credential is not required to be a member of an engineering or project team. This is not an issue about who can do **what work**, it is an issue about who is the **responsible person** for public

projects and how the state assures the public of those persons competence.

The bill also enhances Wisconsin engineers ability to complete for projects nationwide—an economic gain for Wisconsin

AB 288 generally brings Wisconsin in alignment with other states. We don't want to have the "easy path" that is less valued (which is it by other states) and will tend to attract those who may not be qualified.

This is a critical time to move this bill. In the design and construction industry, there is a new procurement method called design-build that you may have heard of. In this procurement, the owner signs a contract that contains the design and construction of the facility—as opposed to a separate contract for the design and a separate contract for the construction. In design-build, contractors are looking to have licensed professional engineers on their staff so they do not have to hire a design firm. The public health, safety and welfare concern needs to be addressed by having that licensed professional engineer in responsible charge of the work. It would be inappropriate, but we have seen cases, where

construction foremen, superintendents, and others are seeking professional engineer credential under the experience clause so they can sign drawings on design build projects where there may have been minimal engineering work done. In no way am I inferring that all contractors are so motivated in this way, in fact I think most are not. However, we need to protect the public against the possibility of misuse of the credential in his way.

Madam Chairperson, although I am not in favor including the 2-year degree option, we will still support this bill. The two-year degree option is currently law and the amendment does not create new law, it merely preserves the status quo for that path to licensure. This bill does in fact; increase the ability of the board to protect the public health, safety and welfare; that is why we support it.

Madam Chairperson, in summary, the Engineer Section of the Joint board and the Joint Board strongly support Assembly Bill 288 and urge its passage at the earliest opportunity.

This bill is needed to update the statues regarding professional engineers. We need to have all engineers measured against the same standard to

ensure the protection of public health, safety, and welfare, and we need to make Wisconsin engineers competitive in the national economy.

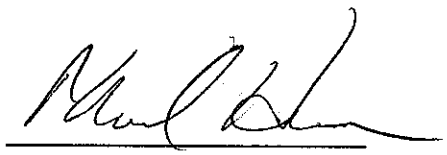
We need to eliminate the opportunity for applicants to review test questions—this practice is outdated and no longer serves any real purpose. It does subject the state to a risk of liability for breaches of exam security.

Finally, we can eliminate the statute requirement for single, specialized topics because it also has outlived its purpose.

This new legislation should be enacted immediately, and there should be no phase-in of the new process.

Thank you again for the opportunity to testify today. I appreciate your consideration of this matter.

I would be happy to answer any questions for the committee.



Martin J. Hanson, PE

WISCONSIN TECHNICAL COLLEGE
DISTRICT BOARDS ASSOCIATION

October 14, 2009

Testimony Supporting AB 288
Strengthening Professional Engineer (PE) Licensing

Assembly Committee on Labor
Representative Christine Sinicki, Chair

Representative Sinicki and distinguished members of the Committee,

On behalf of the local governing boards of Wisconsin's sixteen technical college districts, the Wisconsin Technical College District Boards Association supports AB 288 (including Assembly Amendment 1 offered by Representative Molepske).

The Professional Engineer or PE credential represents a culmination of professional experience and professional competency demonstrated by select leaders in the engineering field. It requires the individual document years of professional leadership experience as approved by the state Examining Board of Architects, Landscape Architects, Professional Engineers, Designers and Land Surveyors ("Examining Board"). This experience must be combined with a demonstration of high-level professional competency through both approved academic work and rigorous testing by the Examining Board.

This contrasts with many other regulated professions in which a license or credential is sought and can be earned upon completing the formal educational program. In nursing, for example, both 2-year technical college and 4-year bachelors nursing graduates may sit for the same exam immediately after completing their studies. A graduate of either program earns the same RN credential upon entering the profession.

AB 288 clarifies Wisconsin's PE licensing requirements and, importantly, assures that every Wisconsin PE satisfactorily pass the PE examinations in order to earn the PE credential. Through this bill, all Wisconsin PE's will have:

- The same total minimum years of academic and professional work, all of which is approved by the Examining Board, and
- Successful completion, without exception, of the same PE examinations administered and approved by the Examining Board.

A key to this bill is that it assures these consistent standards for both leadership experience and professional competency while preserving a track for technical college graduates. While many Wisconsin Technical College-trained engineers go on to earn a bachelors degree, the path is still

limited. Both Marquette University and the Milwaukee School of Engineering offer direct "2+2" or "2+3" bachelors degree completion programs for technical college engineering graduates. In contrast, transfer/degree completion programs are not as readily available through UW institutions. We are pleased that UW-Milwaukee has recently agreed to a bachelor's completion track in engineering for Waukesha County Technical College graduates. UW-Stout now offers a completion program in manufacturing engineering, and UW-Madison and Madison Area Technical College have begun to articulate some engineering courses.

Place-bound Wisconsin engineers working outside the Milwaukee area contribute greatly to the profession's vitality, the needs of Wisconsin engineering firms, and the engineering needs of Wisconsin communities. However, these engineers do not typically have options available to complete the bachelors degree without leaving their employment and out-state community.

Several of the engineering professionals who contacted us about this bill illustrate this issue. For example, two engineers contacted their home college noting that they were preparing for the PE examination and had met, or would soon meet, the requisite years of professional practice at a leadership level suitable to the Examining Board. These engineers lived and worked in Southwest Wisconsin without a viable opportunity to complete additional formal academic work. AB 288 maintains Wisconsin's crucial pathway for professionals like these. This pathway is available in a number of other states including California and New York, both considered "tough" licensing states.

We are confident that AB 288 strengthens and clarifies Wisconsin PE licensing while assuring that the Examining Board grants the credential to only those completely qualified professionals who earn this distinguished credential.

We extend our appreciation to Representative Molepske and the bill's co-sponsors and thank you for your support of AB 288 as amended by Assembly Amendment 1. Respectfully, on behalf of Wisconsin technical college district board members,

Paul Gabriel
Executive Director

ASCE
American Society of Civil Engineers

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Thomas R. Walther, P.E., F.ASCE
Region 3 Director

October 14, 2009

TO: Members
Assembly Committee on Labor

RE: AB-288
Professional Engineer
Licensing Requirements

Ladies and Gentlemen,

I am a resident of Eau Claire and a Registered Professional Engineer in the States of Wisconsin and Iowa. I am also Region 3 Director of the American Society of Civil Engineers representing 14,600 ASCE members from around the upper Midwest which includes 2,100 ASCE members within the State of Wisconsin. I am offering this testimony from the dual perspective of a Wisconsin Professional Engineer and as an ASCE national officer.

The American Society of Civil Engineers, through several of its policies, recommends among other things that holding a baccalaureate degree in engineering plus 4 years of acceptable experience plus passing the written Fundamentals of Engineering and the Principles and Practice exams should be the minimum level of professional competence required in order to be granted a license as a professional engineer. Although AB-288 does not fully equate to the recommendations of ASCE it is such a significant step forward that ASCE supports the adoption of AB-288. Similarly, the National Council of Examiners for Engineering and Surveying, of which the State of Wisconsin engineering registration board is a member, has put forth recommended Model Laws relating to registration requirements for Professional Engineers. Again, this Bill does not fully mirror the suggested Model Law but AB-288 takes a major step toward embracing the Model Law.

Additionally, AB-288 will make significant strides to protect the public health, safety and welfare of the citizens of the State of Wisconsin. The time has long passed when granting a professional engineering license to someone who has simply worked in a particular field of engineering for multiple years without taking the written exam would be acceptable. The depth and breadth of basic knowledge needed to adequately practice the profession of engineering has changed greatly over the years. This relates to not only the areas of technical expertise but also to obtaining the "soft skills" or business and people skills that are so

critical to develop a successfully engineered project. Because of all the changes over time the current law is not only poor public policy but it also does not insure adequate protection of the health, safety and welfare of the citizens of Wisconsin. This updated law is a significant step forward to properly protect the public.

As a result of the major improvements set forth in this bill I am here to offer my support for AB-288. This bill will take much needed steps forward to clear up the educational requirements needed to take the Professional Engineering exam and will eliminate the long antiquated system of allowing persons to obtain a Professional Engineer license without taking any examination what so ever to prove their competency.

I strongly encourage you to vote for adoption of AB-288.

Sincerely,

Thomas R. Walther

Thomas R. Walther, P.E., F. ASCE
Region 3 Director

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Thomas R. Walther, P.E., F.ASCE
Region 3 Director

October 14, 2009

TO: Assembly Committee on Labor

RE: Supplemental information regarding AB-288

To all,

In addition to the formal testimony I have given on this date regarding AB-288 I offer the following information as background on the beliefs of the American Society of Civil Engineers (ASCE) as they relate to civil engineering registration / licensure and the knowledge necessary to perform the practice of civil engineering at the professional level both now and in the future.

First, ASCE has adopted Policy 465 (copy attached) which makes numerous recommendations for academic prerequisites believed necessary to obtain licensure and enter the practice of civil engineering at the professional level. While AB-288 does not meet all the goals of Policy 465 the Bill is a big step forward and thus should be adopted. Recipients of this letter are also encouraged to read Policy 465 and to think about what future legislative actions may be appropriate to further upgrade Wisconsin engineering registration laws to best serve and protect the health and welfare of the public.

Second, legislators may want to review the model law for engineering registration established by the National Council of Examiners for Engineering and Surveying (NCEES). The Wisconsin registration board is a member of NCEES. This model law does recommend more stringent registration requirements than those in Wisconsin law, even after AB-288 is adopted, and thus may be viewed as an idea platform for future upgrades to Wisconsin registration laws.

Finally, readers of this letter may want to consider for the future what employers of civil engineers are saying about the minimum knowledge levels needed to practice civil engineering at the professional level and the impacts of these knowledge levels on Wisconsin registration laws. The Summit on the Future of the Civil Engineering Profession in 2025 was convened by ASCE in 2006. The participants included over 80 of the top leaders in the civil engineering field from around the world representing private employers, the government sector and academia. They

ranged from the current or past chairmen of such firms as Bechtel, AECOM and CH2M Hill to the Administrator of the Federal Highway Administration, leaders from the Army Corps of Engineers, Florida DOT and other government entities plus engineering educators from around the country. These folks concluded that "civil engineers of the future will serve as master builders, environmental stewards, innovators and integrators, managers of risk and uncertainty, and leaders in shaping public policy". This concept for greater levels of professional expertise is observed today right here in Wisconsin where a number of firms, particularly in certain specialties such as structures, will not even hire a new civil engineer graduate who does not possess a master's degree. The point for Wisconsin is that the engineering registration laws of the State of Wisconsin, even after the adoption of AB-288, should some day be considered for further strengthening to meet the long term societal needs for professional engineers who can practice at the professional level.

To conclude, I encourage and endorse the adoption of AB-288 and I hope that engineering professionals and legislators will come together in the future to encourage further upgrades to Wisconsin engineering registration laws.

Respectfully submitted,

Thomas R. Walther

Thomas R. Walther, P.E., F. ASCE
Region 3 Director

American Society of Civil Engineers

ACADEMIC PREREQUISITES FOR LICENSURE AND PROFESSIONAL PRACTICE
ASCE Policy Statement 465

Approved by the Committee on Academic Prerequisites for Professional Practice on February 15, 2007
Approved by the Policy Review Committee on March 9, 2007
Adopted by the Board of Direction on April 24, 2007

Policy

The American Society of Civil Engineers (ASCE) supports the attainment of a Body of Knowledge (BOK) for entry into the practice of civil engineering at the professional level. This would be accomplished through the adoption of appropriate engineering education and experience requirements as a prerequisite for licensure.

ASCE encourages institutions of higher education, governmental units, employers, civil engineers, and other appropriate organizations to endorse, support, promote, and implement the attainment of the Body of Knowledge for individual civil engineers. The Body of Knowledge includes (1) the fundamentals of math, science, and engineering science, (2) technical breadth, (3) breadth in the humanities and social sciences, (4) professional practice breadth, and (5) technical depth or specialization. Fulfillment of the Body of Knowledge requires additional education beyond the bachelor's degree for the practice of civil engineering at the professional level. The implementation of this effort should occur through establishing appropriate curricula in the formal education process, appropriate experience guidelines for the workplace, and related education and experience standards by the 55 engineering licensure jurisdictions.

Admission to the practice of civil engineering at the professional level means professional engineering licensure requiring attainment of a Body of Knowledge through appropriate engineering education, experience and examinations. Fulfillment of this Body of Knowledge will typically include a combination of:

- a baccalaureate degree in civil engineering,
- a master's degree, or approximately 30 coordinated graduate or upper level undergraduate technical and/or professional practice credits or the equivalent agency/organization/professional society courses providing equal academic quality and rigor, and
- appropriate experience based upon broad technical and professional practice guidelines which provide sufficient flexibility for a wide range of roles in engineering practice.

Issue

The practice of civil engineering at the professional level means practice as a licensed professional engineer.

The Body of Knowledge prescribes the necessary depth and breadth of knowledge, skills, and

attitudes required of an individual entering the practice of civil engineering at the professional level in the 21st Century. This Body of Knowledge exceeds today's typical civil engineering baccalaureate degree, even when coupled with the practical experience gained prior to licensure.

The civil engineering profession is undergoing significant, rapid, and revolutionary changes that have increased the Body of Knowledge required of the profession. These changes include the following:

- Globalization has transcended the historically recognized worldwide geographic boundaries primarily as a result of enhanced communication systems.
- Information technology continues to make more information available; however, the analysis and application of this information is becoming more challenging.
- Complex systems are requiring integration of our knowledge and skills outside of traditional sub-discipline focus.
- The diversity of society is challenging our traditional views and increasing our need for improved interpersonal and communications skills.
- any clients are searching for leadership in new management approaches that equitably manage risk as well as improve cost, quality and safety performance.
- New technologies in engineering and construction are emerging at an accelerating rate
- Enhanced public awareness of technical issues is creating more informed inquiry by the public of the technical, environmental, societal, political, legal, aesthetic, and financial implications of engineering projects.
- Civil infrastructure support within the United States is rapidly changing from a focus on development and operation, to the innovative renewal, maintenance, and improvement of existing systems, and the visionary development of new systems.

These changes have created a need for civil engineers to have simultaneously greater breadth of capability and specialized technical competence than that required of previous generations. For example, many civil engineers must increasingly assume a different primary role from that of designer to that of program, project or team leader. The knowledge required to support this new need is found in the combination of an appropriate baccalaureate education, additional education, and experience.

Rationale

Requiring education beyond the baccalaureate degree for the practice of civil engineering at the professional level is consistent with other learned professions. The Body of Knowledge gained in the formal civil engineering education process is not significantly less than the comparable knowledge and skills required in other professions. It is unreasonable to believe in such complex and rapidly changing times that we can impart the specialized Body of Knowledge required of professional engineers in just four years of formal schooling while other learned professions necessitate seven or eight years. Four years of formal schooling were considered the standard for medical, law and engineering professionals 100 years ago. While the education requirements for physicians and attorneys have been increased with the growing demands of their respective professions, the requirements for the practice of engineering have remained virtually unchanged. Today, many other professions beyond medicine and law require education beyond the baccalaureate degree including pharmacy, architecture, occupational therapy and accounting. Most likely, the retention of a four-year undergraduate engineering education has contributed to the lowered esteem of engineering in the eyes of society, and prospective students and the commensurate decline in the perceived value brought forth by engineers relative to other

professions.

Current baccalaureate programs, while constantly undergoing reform, still retain a nominal four-year education process. This length of time limits the ability of these programs to provide a formal education consistent with the increasing demands of the practice of civil engineering at the professional level. There are diametrically opposed forces trying to squeeze more content into the baccalaureate curriculum while at the same time reducing the credit hours necessary for the baccalaureate degree. The result is a baccalaureate civil engineering degree satisfactory for an entry-level position, but becoming inadequate for the professional practice of civil engineering. The four-year internship period (engineer-intern) after receipt of the baccalaureate degree cannot make up for the formal educational material i.e. the expanded Body of Knowledge that would be gained from additional education.

The implementation of this concept will not happen overnight. While ASCE cannot mandate that it be done in a specified time period or manner, ASCE will be an active partner with other groups and organizations to accomplish this policy. The ultimate full implementation may not occur for 5 to 15 or more years. Appropriate grandfathering for existing registered and degreed engineers will be part of the implementation process. This concept is a legacy for future generations of civil engineers. However, perhaps the most important aspect of the implementation of this policy is already in place. Within the U.S. system of higher education, high quality, innovative and diverse master's degree programs currently exist in colleges and universities to support this concept. A growing number of government agencies, public and private organizations, and professional societies now offer high quality on-site and distance learning educational opportunities that can support attainment of the Body of Knowledge outside of college campuses and as adjuncts to employee development. The active support of this policy by all of the stakeholders such as the educational institutions, the registration boards, and the various employers of civil engineers will be required for the implementation of this concept.